

IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (currently amended) A storage subsystem, comprising:
a plurality of channel adapters that each controls the exchange of data with a host device;
a plurality of storage device groups that each provides a logical storage region;
a plurality of disk adapters that each controls the exchange of data with each of the storage device groups;
a cache memory that is used by each of the channel adapters and each of the disk adapters;
a plurality of cache partition regions constituted by logically partitioning the cache memory; and
a control memory that stores management information for managing each of the cache partition regions,
wherein the management information is constituted by both a plurality of partition management information that is used to independently manage corresponding ones of the cache partition regions, and common management information that is used to commonly manage a plurality of the cache partition regions;

wherein the management information is constituted by submanagement information of a plurality of types, and

wherein the partition management information is constituted by partitioning, based on an indication of a kind of status in which data is stored in an area of the cache partition region, some of the submanagement information items for each of the cache partition regions, the remainder of the submanagement information being used as the common management information.

2. (previously presented) The storage subsystem according to claim 1, wherein the partition management information and the common management information are established based on an indication of a kind of status in which data is stored in an area of the cache partition region.

Claim 3 (canceled).

4. (previously presented) A storage subsystem, comprising:
a plurality of channel adapters that each controls the exchange of data with a host device;
a plurality of storage device groups that each provides a logical storage region;
a plurality of disk adapters that each controls the exchange of data with each of the storage device groups;
a cache memory that is used by each of the channel adapters and each of the disk adapters;
a plurality of cache partition regions constituted by logically partitioning the cache memory; and

a control memory that stores management information for managing each of the cache partition regions,

wherein the management information is constituted by partition management information items corresponding to the cache partition regions, and common management information that is applied to all of the cache partition regions,

wherein the management information is constituted by queues of a plurality of types, and counters that are associated with each of the queues; and

wherein the partition management information item are constituted by providing some of the queues and counters in each of the cache partition regions based on an indication of a kind of status in which data is stored in an area of the cache partition region, the remainder of the queues and the remainder of the counters being used as the common management information.

5. (previously presented) The storage subsystem according to claim 4, wherein one of a first queue of the queues and a first counter of the counters, which is associated with said first queue, constitutes the partition management information, and the other is used as the common management information.

6. (original) The storage subsystem according to claim 4, wherein a queue management table is associated with each queue, and the queue management table associated with a queue that constitutes the

partition management information is provided in each of the cache partition regions.

7. (previously presented) A storage subsystem, comprising:
 - a plurality of channel adapters that each controls the exchange of data with a host device;
 - a plurality of storage device groups that each provides a logical storage region;
 - a plurality of disk adapters that each controls the exchange of data with each of the storage device groups;
 - a cache memory that is used by each of the channel adapters and each of the disk adapters;
 - a plurality of cache partition regions constituted by logically partitioning the cache memory; and
 - a control memory that stores management information for managing each of the cache partition regions,
- wherein the management information is constituted by partition management information items corresponding to the cache partition regions, and common management information that is applied to all of the cache partition regions,
- wherein the management information includes:
 - a free queue to which a cache management unit in an unused state is connected and a free queue counter associated with the free queue,

a dirty queue to which a cache management unit for storing data in a dirty state prior to reflection in the storage device group is connected and a dirty queue counter associated with the dirty queue,

a clean queue to which a cache management unit for storing data in a clean state that has been reflected in the storage device group is connected and a clean queue counter associated with the clean queue, and

an in-use counter that counts the total capacity of in-use areas in the cache memory,

wherein the free queue counter, the clean queue, the clean queue counter and the in-use counter are provided in each of the cache partition regions and each constitute the partition management information, and

wherein the free queue, the dirty queue, and the dirty queue counter are used as the common management information.

8. (currently amended) ~~A~~ The storage subsystem according to claim 1, comprising:

a plurality of channel adapters that each controls the exchange of data with a host device;

a plurality of storage device groups that each provides a logical storage region;

a plurality of disk adapters that each controls the exchange of data with each of the storage device groups;

a cache memory that is used by each of the channel adapters and each of the disk adapters;

a plurality of cache partition regions constituted by logically partitioning the cache memory; and

a control memory that stores management information for managing each of the cache partition regions.

wherein the management information is constituted by both a plurality of partition management information that is used to independently manage corresponding ones of the cache partition regions, and common management information that is used to commonly manage a plurality of the cache partition regions, and

wherein each of the cache partition regions can be established for each of the channel adapters.

9. (currently amended) ~~A~~ The storage subsystem according to claim 4 comprising:

a plurality of channel adapters that each controls the exchange of data with a host device;

a plurality of storage device groups that each provides a logical storage region;

a plurality of disk adapters that each controls the exchange of data with each of the storage device groups;

a cache memory that is used by each of the channel adapters and each of the disk adapters;

a plurality of cache partition regions constituted by logically partitioning the cache memory; and

a control memory that stores management information for managing each of the cache partition regions,

wherein the management information is constituted by both a plurality of partition management information that is used to independently manage corresponding ones of the cache partition regions, and common management information that is used to commonly manage a plurality of the cache partition regions, and

wherein one cache partition region among the cache partition regions is established as a common region and a new cache partition region is established by allocating resources belonging to the common region.

10. (currently amended) A method for controlling a storage subsystem that comprises:

a plurality of upper interface control units that each controls the exchange of data with a host device,

a plurality of storage device groups that each provides a logical storage region,

a plurality of lower interface control units that each controls the exchange of data with each of the storage device groups, and

a memory section that is used by each of the upper interface control units and each of the lower interface control units,

wherein the method comprising the steps of:

partitioning a cache region provided by the memory section into a plurality of cache partition regions;

wherein management information corresponding to the cache partition regions is provided for independently managing each of the cache partition regions and common management information is provided for commonly managing a plurality of the cache partition regions; and

independently managing data in each of the cache partition regions based on the partition management information and managing data in a plurality of the cache partition region based on the common management information.

wherein the management information is constituted by submanagement information of a plurality of types; and

wherein the partition management information are constituted by partitioning, based on an indication of a kind of status in which data is stored in an area of the cache partition region, some of the submanagement information items for each of the cache partition regions, the remainder of the submanagement information being used as the common management information.